

CLAIMS

1. A process for the manufacture of seed crystals of a molecular sieve, which comprises synthesizing the molecular sieve by treatment of an appropriate synthesis mixture, separating from the treated synthesis mixture a crystalline molecular sieve comprising particles of a first, larger, particle size in admixture with particles of a second, smaller, size suitable for use as seed crystals, and treating the crystalline molecular sieve to separate the larger particles from the smaller particles.

2. A process as claimed in claim 1, wherein separation is effected by dividing the treated synthesis mixture into liquid and crystalline solid components and washing the solid component at least once, and recovering a washing medium containing the second, smaller size, particles.

3. A process as claimed in claim 2, wherein separation is effected by decanting.

4. A process as claimed in claim 2, wherein separation is effected by centrifuging.

5. A process as claimed in claim 2, wherein separation is effected by filtering.

6. A process as claimed in any one of claims 1 to 5, wherein the solid component is washed a plurality of times until the washing medium becomes hazy, and the hazy washing medium is recovered.

09744715-031001
T00T30" ST 244760

7. A process as claimed in any one of claims 1 to 6, wherein the second, smaller size, particles have a dimension in the range 20 to 400 nm.

5 8. A process as claimed in any one of claims 1 to 7, wherein the molecular sieve is of structure type LEV, FER, TON, MFS, MFI, or MOR.

9. A process as claimed in any one of claims 1 to 8,
10 wherein the molecular sieve is a zeolite.

10. A process as claimed in claim 9, wherein the zeolite is ZSM-22, ZSM-38, ZSM-45, ZSM-57, NU-3, or Mordenite.

11. A process for the manufacture of a crystalline molecular sieve by treatment of a synthesis mixture appropriate for the formation of that molecular sieve, wherein the mixture contains as seeds separated smaller particles obtainable by the process of any one of claims 1 to 10.

12. A process as claimed in claim 11, wherein the concentration of seeds in the synthesis mixture is up to 10000 parts per million, based on the total weight of synthesis mixture.

13. A process as claimed in claim 12, wherein the concentration is within the range of 50 to 2000 parts per million.

30 14. The use of seed crystals obtainable by, and preferably obtained by, the process as claimed in any one of claims 1 to 10 to accelerate the rate of production of a crystalline molecular sieve by treatment of a synthesis mixture.

FOOTNOTES

91

15. The use of seed crystals obtainable by, and preferably obtained by, the process as claimed in any one of claims 1 to 10 to control a characteristic of a crystalline molecular sieve produced by treatment of a synthesis mixture.

5

16. A process as claimed in claim 15, wherein the characteristic is the purity, the phase purity, the particle shape, the particle size, or the particle size distribution.

10 17. The use of seed crystals obtainable by, and preferably obtained by, the process of any one of claims 1 to 10 to facilitate the manufacture of a crystalline molecular sieve by treatment of a synthesis mixture substantially free from organic structure-directing agent.

15

18. The use of seed crystals obtainable by, and preferably obtained by, the process of any one of claims 1 to 10 to facilitate the manufacture of a crystalline molecular sieve by treatment of a synthesis mixture, without stirring, at

20

least after the desired synthesis temperature has been reached.

19. A crystalline molecular sieve of a size suitable for use as seeds, whenever produced by a process as claimed in any
25 one of claims 1 to 10.

20. A crystalline molecular sieve whenever produced by a process as claimed in any one of claims 11 to 13.

30 21. A crystalline molecular sieve as claimed in claim 19 or claim 20, in the form of a supported layer.

22. A crystalline molecular sieve as claimed in claim 20 or claim 21 in a chemical form suitable for use as a catalyst or a separation or absorption medium.

5 23. A hydrocarbon conversion, separation or absorption carried out using a sieve as claimed in claim 22.

24. An oxygenate conversion carried out using a sieve as claimed in claim 22.

09744715-1081001
PCT/GB99/02462